IN THE CLAIMS:

1 (Previously Presented). A large bandwidth add-drop filter for a planar waveguide device comprising:

an input coupling structure receiving an input signal; ~~and~~

an output coupling structure providing an output signal; and

at least two waveguides connected to said input and output coupling structures, said at least two waveguides having a superstructure and superperiod photonic band-gap grating, including variations of grating amplitude and grating phase and grating periodicity, wherein said photonic band-gap grating covers the spectral range of optical frequencies added or dropped by said filter, wherein said filter provides at least one pole and at least one zero at a frequency within said spectral range.

2. (Currently Amended) An add-drop filter as claimed in claim 1, wherein ~~[the]~~ said photonic band-gap covers at least 8 optical channels.

3. (Cancelled)

4. (Currently Amended) An add-drop filter as claimed in claim 1, wherein ~~[the]~~ said grating ~~[waveguides have]~~ has a sampled ~~[grating]~~ strength profile.

5. (Currently Amended) An add-drop filter as claimed in claim 1, wherein at least one ~~[coupler]~~ said coupling structure comprises a directional coupler.

6. (Currently Amended) An add-drop filter as claimed in claim 1, wherein at least one ~~[coupler]~~ said coupling structure comprises multi-mode interference waveguides.

7. (Currently Amended) An add-drop filter as claimed in claim 1, wherein at least one ~~[coupler]~~ said coupling structure comprises diffracting slab waveguides.

8. (Currently Amended) An add-drop filter as claimed in claim 1, wherein at least one ~~[coupler]~~ said coupling structure comprises diffracting slab waveguides.

9. (Currently Amended) An add-drop filter as claimed in claim 1, ~~[further comprising two couplers, in which a first coupler]~~ wherein said input coupling structure provides an input port and a drop port and ~~[a second coupler]~~ said output coupling structure provides an add port and a transmission port.

10 (Previously Presented). An add-drop filter as claimed in claim 1, wherein said superstructure provides spectrally periodic transmission bands aligned with optical channels.

11. (Previously Presented) An add-drop filter as claimed in claim 1, wherein said superstructure has one or multiple superperiods.

12. (Currently Amended) An add-drop filter as claimed in claim 1, wherein [the] said grating ~~[waveguides have]~~ has a sampled ~~[grating]~~ strength ~~[profiles]~~ profile providing a window transmission function, covering a band of optical channels.

13. (Currently Amended) An add-drop filter as claimed in claim 1, wherein ~~[the]~~ said grating ~~[waveguides have]~~ has a sampled ~~[grating]~~ strength ~~[profiles]~~ profile providing two or more window functions, each covering bands of optical channels.

14. (Currently Amended) An add-drop filter as claimed in claim 1 further comprising a grating tuner for changing a group velocity of one or more ~~[of the grating]~~ said waveguides.

15. (Currently Amended) An add-drop filter as claimed in claim 14, wherein [the] said grating tuner heats at least one [of the grating waveguides] said waveguide.

16. (Cancelled)

17. (Cancelled)

18. (Currently Amended) An add-drop filter as claimed in claim 1, wherein one or more ~~[grating arms]~~ said waveguide comprises a delay-line ~~[waveguides]~~.